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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/776,717

02/11/2004

Yoshiki Kino

1232-5283

2826

27123 7590 05/16/2007  
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EXAMINER

GUTIERREZ, KEVIN C

ART UNIT

PAPER NUMBER

2851

MAIL DATE

DELIVERY MODE

05/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

|                              |                               |                               |  |
|------------------------------|-------------------------------|-------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/776,717 | Applicant(s)<br>KINO, YOSHIKI |  |
|                              | Examiner<br>Kevin Gutierrez   | Art Unit<br>2851              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 2-8, 10-13, 15 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-8, 10-13, 15 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, see Remarks, filed March 3, 2007, with respect to the amended claims have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 2-3, 7-8, 10-13, 15 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Sogard (US 2005/0099611).

Regarding claim 2, Sogard discloses "a base (fig. 4, 20; mirror) having a reflecting surface (22; front surface) to be illuminated by light, and plural rear surfaces (30; channels) opposite to the reflecting surface, wherein one of the plural rear surfaces (30) is defined by a cut-out portion (see fig. 5B, where the cut-out portion is formed as a hollowed-out letter "T" forming at least one of the channels 30); and

a cooling mechanism (32, 34), accommodated by the cut-out portion (30), for cooling said base (20) through radiation in a non-contact manner ([0029], lines 6-11, where the pipe 32 and cooling fluid 34 are in a non-contact manner with channel 30).”

Regarding claim 3, Sogard discloses “wherein the reflecting surface (22) has an area to be illuminated 9[0028], lines 3-5), and the cut-out portion (30) located opposite to the area on the reflecting surface (20).

Regarding claims 7 and 8, Sogard discloses wherein the rear surface is defined by the cut-out portion (30) and another cut-out portion at a position different from that of the cut-out portion in a non-illuminated area (see fig. 5B, where another cut-out portion in the lower region is formed other than the upper region of the channel 30, where another cooling system (32, 34) is located in the lower region).

Regarding claim 10, Sogard discloses “wherein the cut-out portion has a shape that changes according to temperature distributions on the surface to be illuminated ([0035], lines 12-14).”

Regarding claim 11, Sogard discloses “wherein the cooling mechanism changes cooling power based on a position according to temperature distributions on the surface to be illuminated ([0038], lines 1-3).”

Regarding claim 12, Sogard discloses “further comprising a mirror (20).”

Regarding claim 13, Sogard discloses “a detector (fig. 12, 1220) for detecting a temperature of said base ([0056], lines 5-9); and

a controller (1230) for controlling said cooling mechanism (32, 34) so that the temperature of said base detected by said detector becomes a predetermined value ([0056], lines 9-12)."

Regarding claims 15 and 17, Sogard discloses the claimed limitations set forth in claim 2 and further discloses "an exposure apparatus (shown in figure 1) comprising an optical system (127) for exposing a pattern formed on a mask or a reticle (133) onto an object (139; substrate)" and "developing the exposed object (fig. 3, step 317)."

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being obvious over Sogard in view of Emoto (US 2003/0035088). The teachings of Sogard have been discussed above.

Regarding claim 4, Sogard discloses "a radiation plate ([0029], lines 3-4, where 32 is a pipe of high thermal conductivity) accommodated by the cut-out portion (30)," but does not disclose "a Peltier element that cools the radiation plate."

However, Emoto teaches a peltier element (201) that cools a radiation plate (200) for heat transfer of an optical device. Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the cooling mechanism of Sogard by including a Peltier element utilized in a manner described above for at least the purpose to promote heat transfer and reduce aberrations.

Regarding claim 5, Sogard as modified discloses the Peltier element and “wherein said cooling mechanism (32, 34) has a channel (32; pipe) for coolant (34) to flow,” but does not disclose “a cooling jacket for recovering heat from the Peltier element.”

However, Emoto teaches a cooling plate (202) for recovering heat from the Peltier element (201). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to further modify the cooling mechanism of Sogard by including a cooling jacket utilized in a manner described above for at least the purpose to reduce aberrations.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being obvious over Sogard in view of Loopstra et al (US 20001/0013925). The teachings of Sogard have been discussed above.

Sogard discloses a cooling mechanism, but does not disclose a heat insulator to prevent the base from absorbing heat.

However, it would have been obvious “wherein said cooling mechanism further includes a heat insulator for preventing the base from absorbing heat obtained by cut-out portion” as taught by Loopstra et al (fig. 4, #540 is a heat shield to prevent

thermal load on to "WH" (substrate holder). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the optical element of Sogard by including a heat shield within the cooling mechanism, which would substantially surround the pipe, for at least the purpose to maintain longer exposure intervals.

### *Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following disclose a cooling mechanism in a cut-out portion for cooling an optical element Eitel et al. (4,844,603), Thompson et al. (4,657,359), Taylor (5,209,291), Roszhart (4,772,110), Shimada (5,444,576), Aldrich et al. (4,674,848), and Carlson (4,253,739).

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and

any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 8:00 a.m. - 5:30 p.m.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571)-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Gutierrez  
Examiner  
Art Unit 2851

May 10, 2007



HENRY HUNG NGUYEN  
PRIMARY EXAMINER